
Mass loss of evolved stars, from the photosphere to the interstellar medium

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Résumé

The mechanisms through which evolved stars enrich the interstellar medium with heavy chemical elements produced by nuclear fusion is a critical, although poorly known step of the cycle of matter in the Universe. While the material moves away from the star, the physical conditions change, inducing the appearance of molecules and dust. The wavelengths at which these species preferentially radiate also evolve typically from the near-infrared to the thermal infrared and the radio domain. The observing techniques now available (adaptive optics, interferometry) give access to very high angular resolutions (~ 10 mas) in each of these domains. For nearby stars, it is therefore possible to follow the formation of molecules and dust from the photosphere of the star up to the interstellar medium. The spatially resolved spectroscopy also gives access to the dynamics of circumstellar envelopes, an essential parameter to understand the engines behind the mass loss of evolved stars. I will present examples of prominent observational results obtained in the last few years on this topic, to emphasize the remarkable complementarity between the different observational techniques.

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